IN THE SPECIFICATION:

Please amend paragraphs [0004] and [0024] as follows:

[0004] In its most technically sophisticated form, directional solidification comprises single crystal casting. In single crystal casting, a seed crystal may be used to initiate crystal growth when the molten metal is poured into the mold cavity, and to control crystal orientation as the solidification front progresses from the seed crystal into the molten metal in the mold cavity. When a single crystal seed crystal is used, a single crystal is expected to grow epitaxially upward from the seed crystal into the mold cavity. In this manner, the seed crystal determines the resulting unidirectional, single crystal of the final cast component. Alternatively ~~or additionally~~ to utilizing a seed crystal, a non-linear tubular grain selector may be utilized to ensure that a predetermined crystal structure is obtained in the final cast component. ~~When used in combination with a seed crystal, this grain selector may be positioned between the seed crystal and the mold cavity to ensure that, even if bad crystal growth begins from the seed crystal (i.e., if no seed replication occurs therefrom) or if noisy crystal growth begins from the seed crystal (i.e., if marginal seed replication occurs therefrom), a high quality single crystal final cast component can still be obtained therefrom.~~ Grain selector supports may also be utilized, if desired, to help bear some of the load placed on the grain selector during casting.

[0024] Generally, it has been believed that the use of grain selectors 30 is not necessary, and is often not even desired, when seed crystals 34 are used. However, ~~it has been~~ the inventors have found that utilizing grain selectors 30 in addition to seed crystals 34 helps improve production yields and promote the formation of the optimum desired crystal structures in the final cast components, especially in the presence of bad or noisy crystal growth starts. For example, if a bad seed start occurs (i.e., if no seed replication occurs in the seed crystal starter cavity 32), the grain selector 30 can select one of the multiple columnar grains that has begun growing from the seed crystal, and propagate a single crystal into the molten metal in the mold cavity 28, saving an otherwise potentially bad casting. If marginal crystal growth begins in the seed crystal starter cavity 32, the grain selector 30 can select the major grain (i.e., the grain of the seed crystal 34) for propagation

into the molten metal in the mold cavity 28, saving an otherwise potentially bad or marginal quality casting. If a clean start occurs (i.e., if 100% seed replication occurs and there are no grain defects in the seed crystal starter cavity 32), it has been shown that the grain selector 30 does not adversely affect the final cast component created therefrom. Furthermore, if a cast component is to be positioned in a casting mold in an orientation that minimizes post cast machining, but that orientation is not thermodynamically preferred for crystal growth, both a seed crystal and a grain selector may need to be utilized to ensure optimum primary and secondary crystal growth in the final cast component. Therefore, ~~embodiments of~~ this invention ~~comprise~~ comprises utilizing a grain selector 30 in conjunction with a seed crystal 34. When used in combination with a seed crystal, this grain selector may be positioned between the seed crystal and the mold cavity to ensure that, even if bad crystal growth begins from the seed crystal (i.e., if no seed replication occurs therefrom) or if noisy crystal growth begins from the seed crystal (i.e., if marginal seed replication occurs therefrom), a high quality single crystal final cast component can still be obtained therefrom. The seed crystal 34 and the grain selector 30 should both be designed to have the structural integrity necessary to minimize flexure and avoid craze cracks while the ceramic shell mold is being formed, thereby preventing metal finning during casting, which can disrupt normal crystal growth and cause stray crystals and non-preferred crystal orientations to form in the final cast component.